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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/359,599	07/23/1999	TAD HOGG	XERX1016MCF/	3028

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EXAMINER

FERRIS III, FRED O

ART UNIT	PAPER NUMBER
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2123

DATE MAILED: 05/09/2003

6

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/359,599

Applicant(s)

HOGG, TAD

Examiner

Fred Ferris

Art Unit

2123

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 July 1999.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 July 1999 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

1. *Claims 1-18 have been presented for examination. Claims 1-8 have been rejected by the examiner.*

Drawings

2. *The application has been filed with informal drawings which are acceptable for examination purposes only. The drawings are objected to because improper margins (37 CFR 1.84(g)), character of lines (37 CFR 1.84(i)), and number/letters (37 CFR 1.84(p)). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.*

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. *Claims 1-27 are rejected under 35 U.S.C. 101 because the claimed invention lacks patentable utility. Specifically, claims 1-27 are drawn to a method for computing diversity for a predetermined combinatorial structure. The Examiner submits that Applicant's have not recited any limitations relating to a practical application in the technological arts. (see MPEP 2106)*

An invention which is eligible for patenting under 35 U.S.C. § 101 is in the "useful arts" when it is a machine, manufacture, process or composition of matter, which

*produces a concrete, tangible, and useful result. The fundamental test for patent eligibility is thus to determine whether the claimed invention produces a “**useful, concrete and tangible result.**” The test for practical application as applied by the examiner involves the determination of the following factors:*

*(1) “Useful” - The Supreme Court in *Diamond v. Diehr* requires that the examiner look at the claimed invention as a whole and compare any asserted utility with the claimed invention to determine whether the asserted utility is accomplished.*

*(2) “Tangible” - Applying *In re Warmerdam*, 33 F.3d 1354, 31 USPQ2d 1754 (Fed. Cir. 1994), the examiner will determine whether there is simply a mathematical construct claimed, such as a disembodied data structure and method of making it. If so, the claim involves no more than a manipulation of an abstract idea and therefore, is nonstatutory under 35 U.S.C. § 101. In *Warmerdam* the abstract idea of a data structure became capable of producing a useful result when it was fixed in a tangible medium which enabled its functionality to be realized.*

(3) “Concrete” - Another consideration is whether the invention produces a “concrete” result. Usually, this question arises when a result cannot be assured. An appropriate rejection under 35 U.S.C. § 101 should be accompanied by a lack of enablement rejection, because the invention cannot operate as intended without undue experimentation.

The Examiner respectfully submits, under current PTO practice, and in view of the 112(1) rejections, that the claimed invention does not recite either a useful, concrete, or tangible result and is merely drawn to a mathematical algorithm.

- The invention is not useful as a result of the 112(1) rejections which make it difficult to determine Applicant's invention.

- The claims are not concrete because the results are not assured. Is a solution possible for any and all arbitrary inputs? For example, is it possible to **compute a diversity measure for any combinatorial structure**, or only for Web based components as described in the specification? (see specification page 5, line 7)

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 1-27 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for web based applications, does not reasonably provide enablement for **computing a diversity measure for any combinatorial structure**. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention commensurate in scope with these claims.

Specifically, claims 1-27 are drawn to computing a diversity measure for a predetermined combinatorial structure. Applicant's specification refers to uses for the claimed that are drawn solely to modeling web pages or groups of web pages (page 2, line 11) and has not disclosed or claimed any other practical application for the claimed invention. Accordingly, the specification does not provide enablement for computing the diversity of any combinatorial structure.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claims 1-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,304,639 issued to Malomsoky et al in view of U.S. Patent 5,966,140 issued to Popovic et al.

Independent claims 1 is drawn to:

Method, computer code, and system for computing diversity measure of a combinatorial structure by:

Identifying substructures (sets) among elements of combinatorial structure

Determining similar substructures from sets

Computing entropy from similar sets

Regarding independent claims 1, 10, and 19: Malomskoy discloses a method, computer readable medium, and system that computes the blocking of paths (unavailability) within a virtual network structure by identifying sets (substructures)

*among the **elements** of the network structure and determining an **entropy-blocking measure** (computing entropy). For example, at column 3, line 49 Malomskoy recites,*

*"The relationship between offered traffic and other computational parameters is modeled on the telecommunications network using an **entropy-blocking measure** and capacities are allocated to the **plurality of virtual paths** subject to the transmission capacity constraints for the various physical links such that the **blocking probabilities** on the various virtual paths are made as uniform as possible within a preselected error bound."*

*A description of the method for computing the **entropy-blocking measure** is disclosed at column 15, line 3 to column 18, line 65. (Also see, Abstract, Summary of the Invention, CL4-L59-CL5-L33, CL10-L20-CL1-L45, Figs. 1, 6, 8, 9, 12)*

Malomskoy mentions, but does not explicitly teach combinatorial structures.

*Popovic teaches a method for **creating combinatorial structures** consisting of **sets of substructures of elements** representing a model structure and methods for comparing (determining) sets with **similar substructures** within the model structure. (Abstract, Summary of Invention, CL6-L20-CL9-L30, CL9-L34-CL11-L10, CL11-L16, CL12-L28, CL18-L47, Figs. 2-6, 8-13)*

*It would have been obvious to one having ordinary skill in the art at the time the claimed invention was made to modify the teachings of Malomskoy relating to a method and system for computing the **blocking** of paths (unavailability) within a virtual **network structure** by identifying **sets** among the **elements** of the network structure and determining an **entropy-blocking measure** (computing entropy), with the teachings of Popovic relating to **creating combinatorial structures** consisting of **sets of substructures of elements** to realize the claimed invention. An obvious motivation exists since, as referenced in the prior art, computing network unavailability and*

blocking using entropy-measure techniques provides a more efficient model that uses minimal computational resources.

*Regarding dependent claims 2-9, 11-18, and 20-27: This group of claims simply relates to methods for computing entropy in **measuring network blocking** which is taught by Malomskoy as disclosed above, and the numbering of element sets, determining similar substructures, distance functions, and isomorphic structures, which is taught by Popovic as also disclosed above.*

Conclusion

6. *The prior art made of record and not relied upon is considered pertinent to applicant's disclosure, careful consideration should be given prior to applicant's response to this Office Action.*

U.S. Patent 5,703,792 issued to Chapman teaches measuring diversity in combinatorial molecular structures.

"A Library for Visualizing Combinatorial Structures", M. Najork, pp. 164-171, IEEE 1070-2385/94, IEEE 1994 – teaches combinatorial structures.

"The Combinatorial Structure of Fuzzy Functional Dependencies", A. C. Sali, pp. 239-243, IEEE 0-7803-3627-5/97, IEEE May 1997 – teaches combinatorial structures.

"A Combinatorial, Strongly Polynomial-time Algorithm for Minimizing Submodular Functions", S. Iwata, STOC 2000, ACM 1-58133-184-4/00/5, 1999 teaches combinatorial structures.

Art Unit: 2123

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fred Ferris whose telephone number is 703-305-9670 and whose normal working hours are 8:30am to 5:00pm Monday to Friday.

Any inquiry of a general nature relating to the status of this application should be directed to the group receptionist whose telephone number is 703-305-3900.

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